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M.P.L.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	
Application No.: 09/593,360	Group Art Unit: 3752
Filed: 6/14/2000	Examiner: C. Kim
Title: System for Automatic Self-proportioning of Foam Concentrate into fire Fighting Fluid Variable Flow Condu (In line, automatic foam proportioner) (CIP)	
Attorney Docket No.: 44500	

Assistant Commissioner for Patents
Washington, D.C. 20231

RESPONSE UNDER 37 CFR 1.111

Dear Sir:

In response to the Office Action of October 2, 2001, please amend this application as follows:

In the claims:

Please amend the claims as per the attached sheets.

REMARKS

Reconsideration and further examination is respectfully requested.

In response to the restriction requirement, applicant elects the invention designated III.

Applicant submits that the claims as amended all comport with invention III.

In particular, in regard to the combination and subcombination distinction, the subcombination has been amended such that it does not have separate utility as a "garden sprayer" or the like.

In regard to the process and apparatus distinction, the apparatus claims have been amended such that they can not be used to practice another materially different process such as "spraying water and fertilizer".

In regard to the different species identified by the examiner, the instant claims relate to the species of figure 3D, figures 10A and 10B, figures 11A and 11B, and figures 11C through 11H.

The independent method claims are 12, 14, 20, 24, and 39. Applicant submits that amended method claim 12, at least, is generic to the above referenced figures. The independent apparatus claims are 1, 19, 21, 33 and 44. Applicant submits that amended apparatus claims 1 and 21, at least, are generic to the above referenced drawings. To the extent that one figure must provisionally be elected, Applicant elects figure 3D.

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Sue Z. Shaper, Applicants' Attorney at 713 550 5710 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,

11/02/01
Date

Sue Z. Shaper
Attorney/Agent for Applicant(s)
Reg. No. 31663

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Amended Claim Sheet

1. (Amended) A system for proportioning fire fighting foam concentrate into variably flowing fire fighting fluid passing through a conduit, comprising:

a conduit for fire fighting fluid having a variable orifice therein, the variable orifice defined at least in part by a first adjusting element, the element in communication with and structured to adjust at least in part in accordance with pressure differential of fluid in the conduit;

b1

a fire fighting foam concentrate passageway connected to a source of fire fighting foam concentrate and having a variable concentrate orifice, the concentrate passageway in fluid communication with fluid passing through the conduit, the variable concentrate orifice at least in part defined by a second adjusting element;

the first and second adjusting elements connected so as to adjust in concert and such that fluid pressure differential acting to adjust the first element enlarges both orifices at a precalibrated rates.

Sub D1

12. (Amended) A method for proportioning fire fighting foaming concentrate into variably flowing fire fighting fluid passing through a conduit, comprising:

adjusting a fire fighting fluid orifice in a fire fighting fluid conduit to maintain a predetermined pressure drop across the orifice as fire fighting fluid flow rate through the conduit varies;

b2

varying a fire fighting foam concentrate orifice in concert with the adjustment of the fire fighting fluid orifice; and

supplying fire fighting foam concentrate through the concentrate orifice into the fire fighting fluid proximate a pressure drop such that a ratio of foaming concentrate proportioned into the fire fighting fluid flowing through the conduit remains approximately constant.

b3 F2

14. (Amended) A method for automatically proportioning fire fighting foam concentrate into variably flowing fire fighting fluid, comprising:

varying a fire fighting fluid orifice in a conduit, thereby creating a pressure drop in the conduit and wherein the varying fire fighting fluid orifice acts as a fire fighting fluid flow rate indicator;

b3 varying a foam concentrate orifice, at a rate calibrated in concert with variations of the fire fighting fluid orifice; and

discharging fire fighting foam concentrate through the variable foam concentrate orifice proximate a low pressure zone created by a pressure drop.

19. (Amended) Apparatus, comprising:

an automatic pressure regulating self-educting foam/fog fire fighting nozzle including an automatically varying fire fighting foam concentrate proportioning orifice,

the nozzle structured to flow at least 50 gpm; and

the orifice in fluid communication with a source of fire fighting foam concertrate.

Sub D3 20. (Amended) A method for comprising:

automatically adjusting a fire fighting nozzle to control discharge pressure;

self-educting fire fighting foam concentrate into the nozzle using a portion of a fire fighting fluid flowing at at least 50 gpm through the nozzle; and

b4 automatically varying a foam proportioning orifice in order to meter foam concentrate self-educted into the nozzle in accordance with fire fighting fluid flow rate through the nozzle.

21. (Amended) Proportioning apparatus for fire fighting systems, comprising:

a housing having an adjustable water passageway adapted to be connected to a source of pressurized water and creating a pressure drop in the system;

an adjustable fire fighting foam concentrate passageway adapted to be connected to a source of fire fighting foam concentrate and communicating with water from the passageway proximate a pressure drop;

the foam passageway connected to the water passageway to adjust in concert; and

a pilot valve in fluid communication with water pressure upstream and downstream of the adjustable water passageway, the valve adapted to influence the adjustment of the water passageway toward maintaining pre-selected pressure drop.

24. (Amended) (New) A method for proportioning foam concentrate into a variable flow fire fighting fluid conduit, comprising:

placing a pressurized fire fighting foam concentrate conduit in fluid communication with a pressurized fire fighting fluid conduit remote from a fire fighting fluid discharge nozzle;

varying a first orifice in the fire fighting fluid conduit to maintain a pre-determined pressure drop in said conduit of a value less than a fire fighting fluid discharge pressure drop; and

varying in concert with the first orifice a second orifice in the foam concentrate conduit such that foam concentrate is proportioned into the fire fighting fluid.

33. (Amended) (New) Apparatus for proportioning fire fighting foam concentrate into a variable flow fire fighting fluid conduit, comprising:

a pressurized fire fighting foam concentrate conduit in fluid communication with a pressurized fire fighting fluid conduit remote from a fire fighting fluid discharge nozzle;

a pilot valve in fluid communication with the fire fighting fluid conduit, structured to vary a first orifice in the fire fighting fluid conduit to maintain a pre-determined pressure drop in said conduit of a value less than a fire fighting fluid discharge pressure drop; and

a second orifice in the foam concentrate conduit adapted to vary in concert with the first orifice such that foam concentrate is proportioned into the fire fighting fluid.

39. (Amended) (New) Method for proportioning foam concentrate into a variable flow fire fighting fluid conduit, comprising:

placing pressurized fire fighting foam concentrate in communication with pressurized fire fighting fluid flowing through a conduit;

arranging a pilot valve sensitive to flow rate of the fire fighting fluid in the conduit; and

adapting the pilot valve to adjust a flow rate of foam concentrate into the fire fighting fluid such that the foam concentrate is proportionally metered into the fire fighting fluid.

44. (Amended) (New) Apparatus for proportioning fire fighting foam concentrate into a variable flow fire fighting fluid conduit, comprising:

a pressurized fire fighting foam concentrate conduit in fluid communication with a pressurized fire fighting fluid conduit;

a pilot valve in fluid communication with the fire fighting fluid conduit, structured to detect variation in flow rate of the fire fighting fluid in the conduit; and

an orifice metering foam concentrate into the fire fighting fluid, structured for adjustment by the pilot valve.

Mark Up Amended Claim Sheet

1. (Amended) A system for proportioning fire fighting foam concentrate into variably flowing fire fighting fluid passing through a conduit, comprising:

a conduit for fire fighting fluid having a variable orifice therein, the variable orifice defined at least in part by a first adjusting element, the element in communication with and structured to adjust at least in part in accordance with pressure differential of fluid in the conduit;

a fire fighting foam concentrate passageway connected to a source of fire fighting foam concentrate and having a variable concentrate orifice, the concentrate passageway in fluid communication with fluid passing through the conduit, the variable concentrate orifice at least in part defined by a second adjusting element;

the first and second adjusting elements connected so as to adjust in concert and such that fluid pressure differential acting to adjust the first element enlarges both orifices at a precalibrated rates.

12. (Amended) A method for proportioning fire fighting foaming concentrate into variably flowing fire fighting fluid passing through a conduit, comprising:

adjusting a fire fighting fluid orifice in a fire fighting fluid conduit to maintain a predetermined pressure drop across the orifice as fire fighting fluid flow rate through the conduit varies;

varying a fire fighting foam concentrate orifice in concert with the adjustment of the fire fighting fluid orifice; and

supplying fire fighting foam concentrate through the concentrate orifice into the fire fighting fluid proximate a pressure drop such that a ratio of foaming concentrate proportioned into the fire fighting fluid flowing through the conduit remains approximately constant.

14. (Amended) A method for automatically proportioning fire fighting foam concentrate into variably flowing fire fighting fluid, comprising:

varying a fire fighting fluid orifice in a conduit, thereby creating a pressure drop in the conduit and wherein the varying fire fighting fluid orifice acts as a fire fighting fluid flow rate indicator;

varying a foam concentrate orifice, at a rate calibrated in concert with variations of the fire fighting fluid orifice; and

discharging fire fighting foam concentrate through the variable foam concentrate orifice proximate a low pressure zone created by a pressure drop.

19. (Amended) Apparatus, comprising:

an automatic pressure regulating self-educting foam/fog fire fighting nozzle including an automatically varying fire fighting foam concentrate proportioning orifice,

the nozzle structured to flow at least 50 gpm; and

the orifice in fluid communication with a source of fire fighting foam concertrate.

20. (Amended) A method for comprising:

automatically adjusting a fire fighting nozzle to control discharge pressure;

self-educting fire fighting foam concentrate into the nozzle using a portion of a fire fighting fluid flowing at at least 50 gpm through the nozzle; and

automatically varying a foam proportioning orifice in order to meter foam concentrate self-educted into the nozzle in accordance with fire fighting fluid flow rate through the nozzle.

21. (Amended) Proportioning apparatus for fire fighting systems, comprising:

a housing having an adjustable water passageway adapted to be connected to a source of pressurized water and creating a pressure drop in the system;

an adjustable fire fighting foam concentrate passageway adapted to be connected to a source of fire fighting foam concentrate and communicating with water from the passageway proximate a pressure drop;

the foam passageway connected to the water passageway to adjust in concert; and

a pilot valve in fluid communication with water pressure upstream and downstream of the adjustable water passageway, the valve adapted to influence the adjustment of the water passageway toward maintaining pre-selected pressure drop.

24. (Amended) (New) A method for proportioning foam concentrate into a variable flow fire fighting fluid conduit, comprising:

placing a pressurized fire fighting foam concentrate conduit in fluid communication with a pressurized fire fighting fluid conduit remote from a fire fighting fluid discharge nozzle;

varying a first orifice in the fire fighting fluid conduit to maintain a pre-determined pressure drop in said conduit of a value less than a fire fighting fluid discharge pressure drop; and

varying in concert with the first orifice a second orifice in the foam concentrate conduit such that foam concentrate is proportioned into the fire fighting fluid.

33. (Amended) (New) Apparatus for proportioning fire fighting foam concentrate into a variable flow fire fighting fluid conduit, comprising:

a pressurized fire fighting foam concentrate conduit in fluid communication with a pressurized fire fighting fluid conduit remote from a fire fighting fluid discharge nozzle;

a pilot valve in fluid communication with the fire fighting fluid conduit, structured to vary a first orifice in the fire fighting fluid conduit to maintain a pre-determined pressure drop in said conduit of a value less than a fire fighting fluid discharge pressure drop; and

a second orifice in the foam concentrate conduit adapted to vary in concert with the first orifice such that foam concentrate is proportioned into the fire fighting fluid.

39. (Amended) (New) Method for proportioning foam concentrate into a variable flow fire fighting fluid conduit, comprising:

placing pressurized fire fighting foam concentrate in communication with pressurized fire fighting fluid flowing through a conduit;

arranging a pilot valve sensitive to flow rate of the fire fighting fluid in the conduit; and

adapting the pilot valve to adjust a flow rate of foam concentrate into the fire fighting fluid such that the foam concentrate is proportionally metered into the fire fighting fluid.

44. (Amended) (New) Apparatus for proportioning fire fighting foam concentrate into a variable flow fire fighting fluid conduit, comprising:

a pressurized fire fighting foam concentrate conduit in fluid communication with a pressurized fire fighting fluid conduit;

a pilot valve in fluid communication with the fire fighting fluid conduit, structured to detect variation in flow rate of the fire fighting fluid in the conduit; and

an orifice metering foam concentrate into the fire fighting fluid, structured for adjustment by the pilot valve.